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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/252,384	06/01/1994	C. STEVEN MCDANIEL	5842-00503	3543

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EXAMINER	
PAK, YONG D	

ART UNIT	PAPER NUMBER
1652	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	08/252,384	MCDANIEL ET AL.	
	Examiner	Art Unit	
	Yong D. Pak	1652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *73 and 75-82* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *73 and 75-82* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This application is a continuation of 07/928,540, now abandoned, which is a divisional of 07/344,258, now abandoned.

The amendment filed on September 18, 2006, amending claims 73, 75-77, and 79-82 and canceling claim 74, has been entered.

Claims 73 and 75-82 are pending and are under consideration.

Response to Arguments

Applicant's amendment and arguments filed on August 8, 2006, have been fully considered and are deemed to be persuasive to overcome some of the rejections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.

Specification

The Sequence Listing filed March 5, 2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The Sequence Listing contains a polynucleotide having the nucleotide sequence of SEQ ID NO:1 and its encoded polypeptide having the amino acid sequence of SEQ ID NO:2. However, the nucleic acid sequence of SEQ ID NO:1 and the amino acid sequence of SEQ ID

NO:2 were not described in the application as originally filed nor in any of its parent applications. The specification as filed contains disclosure of a polynucleotide ("opd gene" of Figure 1) encoding an organophosphorus acid anhydrase which is different from the polynucleotide encoding the organophosphorus acid anhydrase of SEQ ID NO:2 submitted in the Sequence Listings filed on May 21, 2003, October 13, 2004, March 10, 2005 and November 7, 2005. Further, none of the polynucleotide sequence and the polypeptide sequences of SEQ ID NO:1 and 2 disclosed in the four Sequence Listings are identical to each other.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 101

In view of the amendment of claims 79-82, the rejection of claims 79-82 under 35 U.S.C. 101, as being drawn to non-statutory subject matter has been **withdrawn**.

Claim Rejections - 35 USC § 112 – 2nd paragraph

In view of the amendment of claims 75-77 and 80-81, the rejection of claims 75-82 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention has been **withdrawn**.

Claim Rejections - 35 USC § 112- 1st paragraph

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Withdrawn Rejection

In view of the amendment of claim 73, the rejection of claims 73-82 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement (new matter), has been **withdrawn**.

New Rejection

Claims 73 and 75-82 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 73 and 75-82 are drawn to a polynucleotide comprising a nucleotide sequence of SEQ ID NO:3 and a coding sequence encoding an organophosphorous acid anhydrase, plasmid, viral vector, expression vector comprising said polynucleotide, and a bacterial or eukaryotic cell transformed with said expression vector.

It is noted that MPEP 2111.01 states that "[d]uring examination, the claims must be interpreted as broadly as their terms reasonably allow." " In this case, the examiner has broadly interpreted “a nucleotide sequence” to encompass a fragment of as few as

two contiguous nucleic acids of the nucleotide sequence of SEQ ID NO:3. Thus, the claims have been construed as meaning any polynucleotides, isolated from any or all source, including any or all mutants, recombinants and variants thereof, comprising as few as two contiguous nucleic acids of SEQ ID NO:3 that encodes a polypeptide having organophosphorous acid anhydrase. Therefore, the claims are drawn to a genus of polynucleotides encoding polypeptides having organophosphorous acid anhydrase activity, but having unknown structure.

In *University of Calfornia v. Eli Lilly & Co.,* 43 USPQZd 1938, the Court of Appeals for the Federal Circuit has held that "A written description of an invention involving a chemical genus, like a description of a chemical species, 'requires a precise definition, such as by structure, formula, (or) chemical name,' of the claimed subject matter sufficient to distinguish it from other materials". As indicated in MPEP 2163, the written description requirement for a claimed genus may be satisfied through sufficient description of a representative number of species by actual reduction to practice, reduction to drawings, or by disclosure of relevant, identifying characteristics, i.e., structure or other physical and/or chemical properties, by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics, sufficient to show that Applicant was in possession of the claimed genus. In addition, MPEP 2163 states that a representative number of species means that the species which are adequately described are representative of the entire genus. Thus, when there is substantial variation within the

genus, one must describe a sufficient variety of species to reflect the variation within the genus.

The recitation of "organophosphorous acid anhydrase" fails to provide a sufficient description of the claimed genus of proteins as it merely describes the functional features of the genus without providing any definition of the structural features of the species within the genus. The CAFC in UC California v. Eli Lilly, (43 USPQ2d 1398) stated that: "in claims to genetic material, however a generic statement such as 'vertebrate insulin cDNA' or 'mammalian insulin cDNA,' without more, is not an adequate written description of the genus because it does not distinguish the claimed genus from others, except by function. It does not specifically define any of the genes that fall within its definition. It does not define any structural features commonly possessed by members of the genus that distinguish them from others. One skilled in the art therefore cannot, as one can do with a fully described genus, visualize or recognize the identity of the members of the genus." Similarly with the claimed genus of polynucleotides encoding "organophosphorous acid anhydrase" proteins, the functional definition of the genus does not provide any structural information commonly possessed by members of the genus which distinguish the encoded protein species within the genus from other proteins such that one can visualize or recognize the identity of the members of the genus.

Therefore, in the instant case, the claim is drawn to a genus of polynucleotides encoding polypeptides having organophosphorous acid anhydrase activity, but having any structure. The specification only describes a polynucleotide comprising the

nucleotide sequence of SEQ ID NO:3 and encoding a polypeptide having organophosphorous acid anhydrase activity. While MPEP 2163 acknowledges that in certain situations "one species adequately supports a genus," it also acknowledges that "[f]or inventions in an unpredictable art, adequate written description of a genus which embraces widely variant species cannot be achieved by disclosing only one species within the genus." In view of the widely variant species encompassed by the genus, this one example is not enough and does not constitute a representative number of species to describe the whole genus of polynucleotides encoding any or all variants, recombinant and mutants of any or all polypeptides having organophosphorous acid anhydrase activity isolated from any or all source, including any or all variants, recombinants and mutants thereof, and there is no evidence on the record of the relationship between the structure of the organophosphorous acid anhydrase of SEQ ID NO:4 and the structure of any or all recombinant, variant and mutant of any or all polypeptides having organophosphorous acid anhydrase activity. Therefore, the specification fails to describe a representative species of the genus comprising polynucleotides encoding any or all polypeptides having organophosphorous acid anhydrase activity, including any or all variants, recombinants and mutants thereof.

Given this lack of description of the representative species encompassed by the genus of the claims, the specification fails to sufficiently describe the claimed invention in such full, clear, concise, and exact terms that a skilled artisan would recognize that applicants were in possession of the inventions of claims 73 and 75-82.

Applicant is referred to the revised guidelines concerning compliance with the written description requirement of U.S.C. 112, first paragraph, published in the Official Gazette and also available at www.uspto.gov.

Claims 73 and 75-82 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a polynucleotide comprising the nucleotide sequence of SEQ ID NO:3 and encoding a polypeptide having organophosphorous acid anhydrase activity and vectors, plasmids, and host cells comprising said polynucleotide, does not reasonably provide enablement a polynucleotide encoding a polypeptide having any structure. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

Factors to be considered in determining whether undue experimentation is required are summarized in In re Wands 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir. 1988). They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Claims 73 and 75-82 are drawn to a polynucleotide comprising a nucleotide sequence of SEQ ID NO:3 and a coding sequence encoding an organophosphorous

acid anhydrase, plasmid, viral vector, expression vector comprising said polynucleotide, and a bacterial or eukaryotic cell transformed with said expression vector.

The breadth of the claims.

It is noted that MPEP 2111.01 states that "[d]uring examination, the claims must be interpreted as broadly as their terms reasonably allow." In this case, the examiner has broadly interpreted "a nucleotide sequence" to encompass a fragment of as few as two contiguous nucleic acids of the nucleotide sequence of SEQ ID NO:3. Thus, the claims have been construed as meaning any polynucleotides, isolated from any or all source, including any or all mutants, recombinants and variants thereof, comprising as few as two contiguous nucleic acids of SEQ ID NO:3 that encodes a polypeptide having organophosphorous acid anhydrase. Therefore, the claims are drawn to polynucleotides encoding polypeptides having organophosphorous acid anhydrase activity, but having unknown structure.

The scope of the claims is not commensurate with the enablement provided by the disclosure with regard to the extremely large number of polynucleotides of virtually any structure. In the instant case, the specification enables only for a polynucleotide comprising the nucleotide sequence of SEQ ID NO:3 and encoding a polypeptide having organophosphorous acid anhydrase activity.

The quantity of experimentation required to practice the claimed invention based on the teachings of the specification.

While enzyme isolation techniques, recombinant and mutagenesis techniques were known in the art at the time of the invention, e.g. hybridization or mutagenesis, and

it is routine in the art to screen for variants comprising multiple substitutions or multiple modifications as encompassed by the instant claims, the specific amino acid positions within the encoded protein's sequence where amino acid modifications can be made with a reasonable expectation of success in obtaining the desired activity/utility are limited in any protein and the result of such modifications is unpredictable. In addition, one skilled in the art would expect any tolerance to modification for a given protein to diminish with each further and additional modification, e.g. multiple substitutions. Furthermore, while the skilled artisan can produce variants of the polypeptide encoded by SEQ ID NO:3 having the recited structural characteristics using well-known and widely used techniques in the art, the amount of experimentation required is not routine due to the fact that the number of species encompassed by the claims is extremely large.

Therefore, in the absence of: (a) rational and predictable scheme for modifying any amino acid residue with an expectation of obtaining the desired biological function, (b) a correlation between structure and organophosphorous acid anhydrase activity, the specification provides insufficient guidance as to which of the essentially infinite possible choices is likely to be successful. One of skill in the art would have to test these infinite possible polynucleotides/polypeptides to determine (1) which ones have organophosphorous acid anhydrase activity or which ones encode polypeptides having organophosphorous acid anhydrase activity, (2) the specific substrates targeted by such proteins and (3) how to use those polypeptides encompasses by the claims which do not have organophosphorous acid anhydrase activity. While enablement is not

precluded by the necessity for routine screening, if a large amount of screening is required, as is the case herein, the specification must provide a reasonable amount of guidance which respect to the direction in which the experimentation should proceed so that a reasonable number of species can be selected for testing. In view of the fact that such guidance has not been provided in the instant specification, it would require undue experimentation to enable the full scope of the claims.

The state of prior art, the relative skill of those in the art, and predictability or unpredictability of the art.

Since the amino acid sequence of the encoded protein determines its structural and functional properties, predictability of which changes can be tolerated in a protein's amino acid sequence and obtain the desired activity requires a knowledge of and guidance with regard to which amino acids in the protein's sequence, if any, are tolerant of modification and which are conserved (i.e. expectedly intolerant to modification), and detailed knowledge of the ways in which the proteins' structure relates to its function. In the instant case, neither the specification or the art provide a correlation between structure and activity such that one of skill in the art can envision the structure of any polynucleotides encoding polypeptides having the same biological function as that of the polypeptide of SEQ ID NO:4 or predict the function of a polynucleotide/polypeptide from its primary structure. In addition, the art does not provide any teaching or guidance as to (1) which amino acids within the polypeptides encoded by SEQ ID NO:3 can be modified and which ones are conserved such that one of skill in the art can make the recited polypeptides having the same biological activity as that of the

polypeptide of SEQ ID NO:4, (2) which segments of the polypeptide of SEQ ID NO:4 are essential for activity, and (3) the general tolerance of organophosphorous acid anhydrase proteins to structural modifications and the extent of such tolerance. The art clearly teaches that changes in a protein's amino acid sequence to obtain the desired activity without any guidance/knowledge as to which amino acids in a protein are required for that activity is highly unpredictable. At the time of the invention there was a high level of unpredictability associated with altering a polypeptide sequence with an expectation that the polypeptide will maintain the desired activity. For example, Branden et al. (Introduction to Protein Structure, Garland Publishing Inc., New York, page 247, 1991 – form PTO-892) teach that (1) protein engineers are frequently surprised by the range of effects caused by single mutations that they hoped would change only one specific and simple property in enzymes, (2) the often surprising results obtained by experiments where single mutations are made reveal how little is known about the rules of protein stability, and (3) the difficulties in designing de novo stable proteins with specific functions.

The amount of direction or guidance presented and the existence of working examples.

The specification discloses only a polynucleotide comprising the nucleotide sequence of SEQ ID NO:3 and encoding a polypeptide having organophosphorous acid anhydrase activity. However, the speciation fails to provide any information as to (1) specific substrates associated with the polypeptide of SEQ ID NO:4, (2) structural elements required in a polypeptide having organophosphorous acid anhydrase activity,

or (3) which are the structural elements in the polypeptide of SEQ ID NO:4 that are essential to display organophosphorous acid anhydrase activity. No correlation between structure and function of having organophosphorous acid anhydrase activity has been presented. There is no information or guidance as to which amino acid residues in the polypeptides of SEQ ID NO:4 can be modified and which ones are to be conserved to create a polypeptide displaying the same activity as that of the polypeptides of SEQ ID NO:4.

Thus, in view of the overly broad scope of the claims, the lack of guidance and working examples provided in the specification, the high level of unpredictability of the prior art in regard to structural changes and their effect on function and the lack of knowledge about a correlation between structure and function, an undue experimentation would be necessary one having ordinary skill in the art to make and use the claimed invention in a manner reasonably correlated with the scope of the claims. The scope of the claims must bear a reasonable correlation with the scope of enablement (*In re Fisher*, 166 USPQ 19 24 (CCPA 1970)). Without sufficient guidance, determination of polypeptides having the desired biological characteristics recited in the claim is unpredictable and the experimentation left to those skilled in the art is unnecessarily, and improperly, extensive and undue. See *In re Wands* 858 F.2d 731, 8 USPQ2nd 1400 (Fed. Cir, 1988).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 73, 75 and 77-81 are rejected under 35 U.S.C. 102(e) as being anticipated by Seder et al. (US Patent No. 5,484,728).

Claims 73, 75 and 77-81 are drawn to a polynucleotide comprising a nucleotide sequence of SEQ ID NO:3 and a coding sequence encoding an organophosphorous acid anhydrase, plasmid, expression vector comprising said polynucleotide, and a bacterial or eukaryotic cell transformed with said expression vector. It is noted that

MPEP 2111.01 states that "[d]uring examination, the claims must be interpreted as broadly as their terms reasonably allow." In this case, the examiner has broadly interpreted "a nucleotide sequence" to encompass a fragment of as few as two contiguous nucleic acids of the nucleotide sequence of SEQ ID NO:3. Thus, the claims have been construed as meaning any polynucleotides, isolated from any or all source, including any or all mutants, recombinants and variants thereof, comprising as few as two contiguous nucleic acids of SEQ ID NO:3 that encodes a polypeptide having organophosphorous acid anhydrase.

Serdar et al. (U.S. Patent No. 5,484,728 – cited previously on form PTO-892) a polynucleotide comprising a nucleotide sequence of SEQ ID NO:3 and a coding sequence encoding an organophosphorous acid anhydrase, plasmid, expression vector comprising said polynucleotide, and a bacterial or eukaryotic cell transformed with said expression vector (See sequence alignment and claims 1-8 of Serdar et al.). Serdar et al. also discloses vectors and host cells comprising said polynucleotide (Columns 7-15 and claims 1-8). Therefore, the reference of Serdar et al. anticipates claims 73-75 and 77-81.

In response to the previous Office Action, applicants have traversed the above rejection. Applicants argue that Serdar et al. is not available as prior art against the presently claimed case and have filed a declaration under 37 CFR 131, antedating said reference. Examiner respectfully disagrees.

The Serdar et al. (US Patent No. 5,484,728) reference is a U.S. patent or U.S. patent application publication of a pending or patented application that claims the

rejected invention. An affidavit or declaration is inappropriate under 37 CFR 1.131(a) when the reference is claiming the same patentable invention, see MPEP § 2306. If the reference and this application are not commonly owned, the reference can only be overcome by establishing priority of invention through interference proceedings. See MPEP Chapter 2300 for information on initiating interference proceedings. If the reference and this application are commonly owned, the reference may be disqualified as prior art by an affidavit or declaration under 37 CFR 1.130. See MPEP § 718.

Hence the rejection is maintained.

Claims 73, 75, 77-78, and 80 are rejected under 35 U.S.C. 102(b) as being anticipated by Mulbry et al.

Claims 73, 75, 77-78, and 80 are drawn to a polynucleotide comprising a nucleotide sequence of SEQ ID NO:3 and a coding sequence encoding an organophosphorous acid anhydrase, plasmid, expression vector comprising said polynucleotide, and a bacterial cell transformed with said expression vector. It is noted that MPEP 2111.01 states that "[d]uring examination, the claims must be interpreted as broadly as their terms reasonably allow." In this case, the examiner has broadly interpreted “a nucleotide sequence” to encompass a fragment of as few as two contiguous nucleic acids of the nucleotide sequence of SEQ ID NO:3. Thus, the claims have been construed as meaning any polynucleotides, isolated from any or all source, including any or all mutants, recombinants and variants thereof, comprising as few as

two contiguous nucleic acids of SEQ ID NO:3 that encodes a polypeptide having organophosphorous acid anhydrase.

Mulbry et al. (Applied and Environmental Microbiology, May 1986, p. 926-930 - PTO-1449) discloses an *opd* gene cloned from *Pseudomonas diminuta* (pCMS1) encoding an organophosphorous acid anhydrase, plasmid and expression vector comprising said polynucleotide, and a bacterial cell transformed with said expression vector (2nd column on page 927 "Cloning of the *opd* gene sequence from *P. diminuta*"). The opd gene of SEQ ID NO:3 of the instant invention is also cloned from P. diminuta (pCMS1) (specification on page 21, lines 1-21). Therefore, Examiner takes the position that the *opd* gene of Mulbry et al. comprises of at least two nucleotides of the *opd* gene of SEQ ID NO:3 of the instant invention. Therefore, Examiner takes the position that the *opd* gene of Mulbry et al. inherently possesses the same material structure and functional characteristics as the *opd* gene of the claimed invention since (1) both genes are isolated from the same source, *P. diminuta* pCMS1, (2) both genes encode polypeptides having organophosphorous acid anhydrase activity, and (3) the Office does not have facilities for examining and comparing applicant's enzyme with the enzyme of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the *opd* gene of the prior art does not possess the same material structure and functional characteristics of the claimed *opd* gene). See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re Figzgerald* et al., 205 USPQ 594. Therefore, the reference of Mulbry et al. anticipates claims 73, 75, 77-78, and 80.

Claims 73, 75, 77-78, and 80 are rejected under 35 U.S.C. 102(b) as being anticipated by Serdar et al.

Claims 73, 75, 77-78, and 80 are drawn to a polynucleotide comprising a nucleotide sequence of SEQ ID NO:3 and a coding sequence encoding an organophosphorous acid anhydrase, plasmid, expression vector comprising said polynucleotide, and a bacterial cell transformed with said expression vector. It is noted that MPEP 2111.01 states that "[d]uring examination, the claims must be interpreted as broadly as their terms reasonably allow." In this case, the examiner has broadly interpreted "a nucleotide sequence" to encompass a fragment of as few as two contiguous nucleic acids of the nucleotide sequence of SEQ ID NO:3. Thus, the claims have been construed as meaning any polynucleotides, isolated from any or all source, including any or all mutants, recombinants and variants thereof, comprising as few as two contiguous nucleic acids of SEQ ID NO:3 that encodes a polypeptide having organophosphorous acid anhydrase.

Serdar et al. (BIO/TECHNOLOGY VOL. 3, June 1985 - PTO-1449) discloses an *opd* gene cloned from *Pseudomonas diminuta* (pCMS1) encoding an organophosphorous acid anhydrase, plasmid and expression vector comprising said polynucleotide, and a bacterial cell transformed with said expression vector (pages 567-570). The opd gene of SEQ ID NO:3 of the instant invention is also cloned from P. diminuta (pCMS1) (specification on page 21, lines 1-21). Therefore, Examiner takes the position that the *opd* gene of Serdar et al. comprises of at least two nucleotides of

the *opd* gene of SEQ ID NO:3 of the instant invention. Therefore, Examiner takes the position that the *opd* gene of Serdar et al. inherently possesses the same material structure and functional characteristics as the *opd* gene of the claimed invention since (1) both genes are isolated from the same source, *P. diminuta* pCMS1, (2) both genes encode polypeptides having organophosphorous acid anhydrase activity, and (3) the Office does not have facilities for examining and comparing applicant's enzyme with the enzyme of the prior art, the burden is on the applicant to show a novel or unobvious difference between the claimed product and the product of the prior art (i.e., that the *opd* gene of the prior art does not possess the same material structure and functional characteristics of the claimed *opd* gene). See *In re Best*, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and *In re Figzgerald* et al., 205 USPQ 594. Therefore, the reference of Serdar et al. anticipates claims 73, 75, 77-78, and 80.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 76, 79 and 81-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Serdar et al. (US Patent 5,484,728), Mulbry et al. **or** Serdar et al. (BIO/TECHNOLOGY) in view of Wong et al.

Claims 76, 79 and 81-82 are drawn to a viral vector and a mammalian/eukarytoic cell comprising a nucleotide sequence of SEQ ID NO:3.

Serdar et al. (US Patent 5,484,728), Mulbry et al. **or** Serdar et al. (BIO/TECHNOLOGY) discloses a nucleotide sequence of SEQ ID NO:3, as discussed above.

The above references do not teach a viral vector or a mammalian/eukaryotic cell comprising said nucleotide sequence.

However, viral vectors and mammalian/eukaryotic host cells for the expression of heterologous proteins is well known. Wong et al. (U.S. Patent No. 4,849,355 – form PTO-892) discloses viral vectors and mammalian host cells comprising a heterologous polynucleotide (Columns 3-4 and claims 1-10).

Therefore, combining the teachings of Serdar et al. (US Patent 5,484,728), Mulbry et al. **or** Serdar et al. (BIO/TECHNOLOGY) and Wong et al., it would have been obvious to one having ordinary skill in the art make a viral vector or mammalian host cell comprising the polynucleotide of Serdar et al. (US Patent 5,484,728), Mulbry et al. **or** Serdar et al. (BIO/TECHNOLOGY). One of ordinary skill in the art would have been motivated to make such a construct to test expression of the claimed polypeptide as a heterologous protein in a mammal. One of ordinary skill in the art would have had a reasonable expectation of success since Wong et al. teaches how to make such a construct and successfully express heterologous proteins in mammals.

Therefore, the above references render claims 76, 79 and 81-82 *prima facie* obvious to one of ordinary skill in the art.

In response to the previous Office Action, applicants have traversed the above rejection. Applicants argue that Serdar et al. (US Patent No. 5,484,728) is not available as prior art against the presently claimed case and have filed a declaration under 37 CFR 131, antedating said reference. Examiner respectfully disagrees.

The Serdar et al. (US Patent No. 5,484,728) reference is a U.S. patent or U.S. patent application publication of a pending or patented application that claims the rejected invention. An affidavit or declaration is inappropriate under 37 CFR 1.131(a) when the reference is claiming the same patentable invention, see MPEP § 2306. If the reference and this application are not commonly owned, the reference can only be overcome by establishing priority of invention through interference proceedings. See MPEP Chapter 2300 for information on initiating interference proceedings. If the

reference and this application are commonly owned, the reference may be disqualified as prior art by an affidavit or declaration under 37 CFR 1.130. See MPEP § 718.

Hence the rejection is maintained.

Conclusion

No claim is allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong Pak whose telephone number is 571-272-0935.

The examiner can normally be reached 6:30 A.M. to 5:00 P.M. Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nashaat Nashed can be reached on 571-272-0934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

/Yong D Pak/
Primary Examiner, Art Unit 1652